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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/372,531 08/11/99 BOHNSTEDT W 534P007

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KEVIN S LEMACK
NIELDS LEMACK & DINGMAN
176 E MAIN STREET SUITE 8
WESTBORO MA 01581

EXAMINER

DOVE, T

ART UNIT

PAPER NUMBER

1745

DATE MAILED:

01/31/01

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/372,531

Applicant(s)

Bohnstedt et al.

Examiner

Tracy Dove

Group Art Unit

1745



☒ Responsive to communication(s) filed on 11 Aug 1999

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-14 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-14 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Claim Objections

✓ Claim 11 is objected to because of the following informalities: “inner surfaces” should be amended to state “inner surface”.

✓ Claim 13 is objected to because of the following informalities: after “in” add “the”.
Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

✓ Claim 1 states a “vertical rib in the center area of at least one side of the sheet provided with a plurality of studs”. It is unclear whether the vertical rib has to be on the same side of the sheet as the studs.

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✓ In claims 4 and 8, the phrase "and/or" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

✓ Regarding claim 8, it is unclear how the studs could be formed of a different material than the separator sheet. The specification does not describe such an embodiment.

rw Claim 9 recites the limitation "the electrode plate" in line 4. There is insufficient antecedent basis for this limitation in the claim.

✓ Claim 5 recites the limitation "the continuous ribs". There is insufficient antecedent basis for this limitation in the claim.

To the extent the claims are understood in view of the objections and 35 U.S.C. 112 rejections to the claims above, note the following prior art rejections.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Grimes et al., US 4,396,689 "Grimes".

Grimes teaches an electrochemical cell with a novel separator-spacer. The separator-spacer sheet has a microporous mid-portion surface which is recessed from the non-porous

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surface of the sides. Projections on the microporous mid-portion surfaces are designed to maintain a spaced compartmental distance between the separator-spacer surface and the flat conductive surfaces of adjacent electrode sheets. The projections provide structural means against collapse of the separator-spacer mid-portion surface upon the electrode sheet. The projections are usually designed as pebbles (studs), but may also be rod-shaped (ribs). The projections may also be a combination of pebble and rod-shaped protuberances as depicted in Figs. 7c, 7cc, 7d and 7dd. See col. 5, lin 1-25. Figure 7c clearly shows the claimed invention. Figure 7cc shows the pebbles are the same height as the rod-shaped protuberances.

Thus the claims are anticipated.

Claims 1, 3, 4, 7, 10-12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Holmes US 1,116,818.

Holmes teaches a separator having two transversely extending ribs L and L' for supporting the leaden plate E. The face of the separator is provided with knobs H for the purpose of holding the electrodes out of contact with the face of the separator. See Fig. 3 which discloses 2 vertical ribs.

Thus the claims are anticipated.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimes et al., US 4,396,689 "Grimes".

See discussion of Grimes above.

Grimes does not explicitly state the number of pebbles per square centimeter of the separator. Grimes does not state the separator can be provided in a roll form or that the separator is used specifically for lead acid batteries.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because Grimes clearly shows and suggests that a different number and/or shape of protrusions can be provided in the separator sheet. Figures 7c and 7d show a different number of protrusions and the skilled artisan would be motivated to vary the number of protrusions as suggested by Grimes.

Regarding the separator being provided in a roll form, the skilled artisan would have known that separator production and cell manufacturing are usually performed at different locations (instant specification page 10). Therefore, the skilled artisan would have known the separator could be rolled up for easier transporting.

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Regarding the use of the separator in lead acid batteries, Grimes suggests the separator be used in the automotive and battery industries. The skilled artisan would have known the lead acid batteries are commonly used in the automotive industry to provide power to automobiles.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimes et al., US 4,396,689 "Grimes" in view of Battersby US 4,490,447.

See discussion of Grimes above.

Grimes does not explicitly state the studs or the ribs are formed of a different material than the separator sheet or that a rib is applied to an electrode plate.

However, Battersby teaches a separator having a plurality of ribs. The ribs are extruded and then applied/bonded to the separator sheet. The ribs may be made of a different polymeric material than the separator sheet. See abstract.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because ribs made of a different material than the separator sheet are known in the art. Both separator sheets having integral protrusions and separator sheets having applied/bonded protrusions improve the mechanical strength and integrity of the separator sheet. See Battersby col. 1, lin 38-47. Either embossed or rib-like protrusions can suitably perform this function.

Furthermore, whether the protrusions are integral or applied/bonded to the separator sheet, the sheets as an end product are the same.

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Regarding the rib being applied to an electrode sheet, since the separator sheet with protrusions keeps the sheet from contacting the electrode plate one of skill would have known that the rib could be applied to the electrode plate instead of the separator sheet. The rib would still provide the same desired result of keeping the separator sheet from contacting the electrode plate.

Claims 10-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimes et al., US 4,396,689 "Grimes" in view of Willmann et al., US 5,250,372 "Willmann".

See discussion of Grimes above.

Grimes does not explicitly teach the separator forms a pocket for enveloping the electrode plate.

However, Willmann teaches a separator for a lead acid battery which can have hemispherical protuberances or ribs for spacing the separator apart from the electrode plate. The separators are wrapped around, or enveloped about, the bottom edge of the electrode (pocket).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because both Grimes and Willmann teach separator sheets for electrochemical cells having protrusions for preventing the separator sheets from contacting the electrodes. One of skill in the art would have known the separator sheets used for lead acid batteries are commonly wrapped around the electrodes.

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Conclusion


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Knauer 5,558,952 teaches pocket separators for lead acid batteries having a plurality of continuous vertical ribs.

Bohle et al. 4,788,113 teaches a pocket separator for lead acid batteries having separating ribs so that the sheet material can be wound into a roll.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. The Examiner may normally be reached *Monday-Thursday from 8:00 AM - 6:30 PM*. My acting supervisors are Carol Chaney, who can be reached at (703) 305-3777, and Steve Kalafut, who can be reached at (703) 308-0433. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax number is (703) 305-3599.

January 19, 2001


STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP 1700